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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,465	12/23/2003	Jorge Gustavo Vigil	P69260US0	8141
136	7590	10/24/2006		
JACOBSON HOLMAN PLLC 400 SEVENTH STREET N.W. SUITE 600 WASHINGTON, DC 20004			EXAMINER DRODGE, JOSEPH W	
			ART UNIT 1723	PAPER NUMBER

DATE MAILED: 10/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/743,465	<b>Applicant(s)</b> VIGIL ET AL.	
	<b>Examiner</b> Joseph W. Drodge	<b>Art Unit</b> 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2006.
- 2a) ☒ This action is **FINAL**.      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vandenmersch et al patent publication US2004/0235664 in view of Morgenstern et al patent 6,232,494 and Smith patent 5,087,740.

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The claims firstly differ in requiring that the obtained glyphosate product be obtained by way of oxidation of a diacetic acid compound, since Vandenmersh et al advocate using hydrolyzation of a hexahydrotraizine compound to obtain glyphosate. However, Morgenstern et al teach to manufacture glyphosate by such oxidation mechanism (column 3, line 47-column 4, line 10, etc); and to use membrane processes effective to retain glyophosate or similar products in the retentate and pass impurities into the permeate (column 24, line 45-column 25, line 15) . It would have been obvious to one of ordinary skill in the art to have manufactured glyphosate using oxidation of diacetic acid, as taught by Morgenstern, while purifying the glyphosate by the pH adjustment and nanofiltration process disclosed by Vandenmersch, in order to manufacture the glyophosate by a process enabling recycling of raw materials to facilitate manufacturing on an industrial scale.

It would have been obvious to one of ordinary skill in the art to have applied the pH adjusting and nanofiltration process steps to purifying of glyophosate when it is derived from oxidation of the diacetic acid compound, in combining different teachings or aspects of Vandenmersch et al, and in view of Morgenstern et al, since this process results in an increase in yield of the glyophosate and recovery and recycling of byproducts (see paragraphs 55-57 and 64-69).

Vandenmersch et al disclose **that** purifying of a glyphosate solution obtained by oxidation with a diacetic acid compound and containing organic impurities including at least formaldehyde **by submitting the solution to microfiltration, and removing the impurities, including formaldehyde, in the permeate and hence concentrating the glyphosate in the retentate is known** (para. 1 & 2),

Vandenmersch also disclose purifying of a glyphosate solution, obtained from hydrolyzation of a hexahydrotiazine derivative reacted with a triactyl phosphate (para. 4), by the steps of providing an initial solution of glyphosate having a concentration that may be below 3% (para. 27-31), adjusting the pH of that solution by addition of a base such as sodium or potassium hydroxide (para. 33) , subjecting the solution to nanofiltration with at least one nanofiltration membrane, at ambient or slightly elevated temperature and under an elevated pressure (25-35 Kg/cm<sup>2</sup>), (nanofiltration taught in para. 34 and see para. 37 and 38 for discussions of temperature and pressure), discarding the organic impurity-containing permeate (para. 55) and recovering a concentrated glyphosate solution containing approximately 97% or more of the initial glyphosate at increased concentrations of more or less than the recited 8% value (see para. 64-69).

The claims also differ in requiring the initial solution to also contain formic acid. However, each of Morgenstern et al (Example 16, column 38, lines 37-47) and Smith (column 1, lines 44-64) teach to manufacture glyphosate by processes that generate solutions obtained by oxidation of a reaction mixture containing both formaldehyde and formic acid, followed by various steps of removing these impurities (see Morgenstern at column 18, lines 43-46, etc. and Smith at column 2, lines 20-57 etc.). It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized formic acid in the manufacture of the glyphosate of the Vandenmersch et al process, as suggested by Morgenstern et al and Smith, since formaldehyde and formic acid together serve as effective reactants in oxidation processes to increase the yield of a glyphosate product.

The claims also differ in the particular specific recited pressures and concentration or yield of the glyphosate and amounts of formaldehyde and formic acid in the permeate. However, it would have been additionally obvious to have optimized the separation of glyphosate and organic impurities and the working flow rates and pressures, by routine experimentation and variation of conditions of temperature, pressure, flow rate and pressure, and may vary depending on factors such as the particular membrane module selected as suggested by Vandenmersch in paragraph 39. He also disclose that particular temperatures and pressures employed are not critical in paragraphs 36-38.

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Regarding claims 2 and 4, Smith et al teach addition of alkyl amines to glyphosate solutions being purified to increase the recovery of the glyphosate after it has been concentrated at column 4, lines 53-68 continuing to column 5, line 27.

For claim 3, Vandenmersch teaches nanofiltration performed by any desired number of nanofilters arranged in series (para. 44,51), and adjustment of flow and pressure conditions (para. 65-69).

For claim 5, Vandenmersch teach tubular or columnar nanofiltration membranes that may be of any desired size (para. 35,39) and operation at relatively cool ambient temperatures (para. 37).

For claim 6, Vandenmersch also teach repeated recycling of the glyphosate retentate being concentrated to increase the concentration (para. 44-45) and the nanofiltration being performed under pressure (para. 65-69).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Leiber et al patent 6,586,621 is of interest for purifying the claimed composition by sequential steps of an oxidation reaction and microfiltration (column 36).

Applicant's arguments filed on 20 September 2006 have been fully considered but they are not persuasive. It is argued that the '664 patent (Vandermersch) concerns nanofilter purification of a glyphosate composition completely different from the mother liquor obtained in the oxidation of PMIDA. However, the two processes commonly concern concentration of glyphosate composition in the retentate from a membrane separation and removal of organic impurities (see paragraph 6) in the permeate, thus are substantially related.

It is stated that the '664 nanofiltration process is not a glyphosate purification process, however paragraphs 57,67 and 69 in particular are drawn to obtaining glyphosate of up to 99.99% purity.

It is argued at length that neither of the teaching references are pertinent since they utilize widely varying processes for separating the glyphosate from its impurities including formaldehyde and formic acid. However, these references were primarily applied to verify that both formaldehyde and formic acid are impurities which are present in significant amount in the production of glyphosate from oxidation of PMIDA and require elimination from the product. That they concern disparate means for achieving this common goal with '664 does not detract from the disclosure of '664 in removing impurities from glyphosate by microfiltration or nanofiltration.



**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached at 571-272-1151. The fax phone number for the examining group where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

October 20, 2006

  
JOSEPH DRODGE  
PRIMARY EXAMINER